

Noorda Wlk.

N. blitealis Wlk.—*Moringa pterygosperma* (Lefroy).

Metasia Guen.

M. coniotalis Hamps.—Sweet potato tubers (Lefroy).

Pionea Guen.

P. ferrugalis Hbn.—Cabbage, *Blumea balsamifera* (Lefroy).

Pyrausta Schrank.

P. machoeratis Wlk.—Teak (Fauna).

P. incoloralis Guen.—*Calotropis gigantea* (mihi).

P. coclesalis Wlk.—Bamboo (Fauna), occasionally on Maize (Lefroy).

P. bambucivora Moore—Bamboo (Fauna).

P. salentialis Snell.—Boring in stems of *Polygonum* (Lefroy).

I have, in addition, the following record, but the species does not appear in the Fauna and I am not sure of its actual affinities.

Phostria piasnsalis Wlk.—*Coleus parviflora* (Aiyar, *Journ., Bomb. Nat. Hist. Soc.*, xi, 336).

THE BUTTERFLIES OF THE KHASIA AND JAINTIA HILLS, ASSAM

BY

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Since the publication of Swinhoe's list in 1893 we have not been able to trace any detailed list of butterflies from the Khasia and Jaintia Hills in Assam and the present list is intended to assist collectors in giving as precise information as possible with regard to localities.

The high plateau of the Khasia and Jaintia Hills is almost bare of trees save scattered pines. The forests are on the lower hills. They commence at Umran, 21 miles from Shillong, called the 42nd Mile since miles are reckoned from Gauhati on the Gauhati Road (G. S. Road). Good localities are Mile 40 near the Margaret Falls; Mile 36 near Umsaw Nongkharai Village; the path into the forests at Mile 33; another such path at Mile 36; Nongpoh Inspection Bungalow at Mile 30; Umling forest path at Mile 23; Burnihat Inspection Bungalow and the path leading up the river from it at Mile 16.

Shillong 5,000 ft., Umran 2,300 ft., Nongpoh 1,760 ft., Burnihat plains level.

No advantage has been found from penetration into the woods elsewhere. The villages are few and the whole region is very malarious in the monsoon.

The other wooded area is to the south on the slopes towards Sylhet District, extending from the Garo Hills border on the west to the North Cachar Hills on the east. There are many villages growing oranges, areca nuts, bag leaf trees and pan vines; but travel is difficult except for the district officers, as there are no rest houses and porters are needed. The only areas accessible are those beside the Shillong-Sylhet motor road and that below Cherrapunjee.

Along the Shillong-Sylhet road are the Laitlyngkot Inspection Bungalow, 6,000 ft., 17 miles from Shillong where *Argynnis rudra* is found; Pynursla Inspection Bungalow 4,900 ft., 30 miles from Shillong where *Meandrusa gyas gyas*, *Meandrusa evan*, *Appias lalage lalage* and *Aporia agathon agathon* occur in the small woods behind the bungalow; Poontoong, 40 miles from Shillong where *Leptocircus curius* is found at the bridge; the wooded area onwards to Dawki and finally the villages Darrang and Shnongpedeng reached by boat or on foot within 2 miles of Dawki and called simply Dawki in this list, for brevity. There is a bungalow at Dawki and the place is excellent, yielding uncommon species.

The area below Cherrapunjee has always been noted but Mawmai where the motor road ends, 3 miles below Cherrapunjee bungalow, is also excellent. Further on one must walk 2 miles down to the woods at Mahadei (Laitera). An arrangement to stay in a Khasi village house there would save much tramping. There is an inspection bungalow at the foot of the hills at Therria. On the south-west, a Welsh Mission bungalow at Laitkynew could be occupied by permission as a centre, but a daily steep climb up and down to the best localities below the bungalow is required. Another route is from Cherrapunjee bungalow eastwards across the plateau 2 miles to Kut Madan by cycle and from there a steep path goes down through woods from where one can return on the same day. In the precipitous gorge of the Umiam, west of Cherrapunjee the Khasi collectors in the villages of Mawphu and Thiedding produce rarities for a dealer but the woods are not swarming with butterflies as one of us found, who had to stay there on duty for a week in June and saw nothing even on days where there was no rain, and the rainfall in Cherrapunjee area is the heaviest in the world, upwards of 400 inches. Trips may be entirely fruitless, as there may be no sunshine for days together.

There are no species on the high plateau not obtainable near the motor roads, Shillong-Cherrapunjee or Shillong-Mawphlang, so journeys into the interior of the plateau are of no benefit.

The high plateau of the Jaintia Hills (Jowai sub-division) is a poor place as trees are mostly planted blocks of pines. The southern slopes towards Sylhet District are of course as good as the Cherrapunjee area; but the only accessible place is Syndai Inspection Bungalow, 2,500 ft., 6 miles from Jaintiapur Inspection bungalow, which is on the 60th mile of the Shillong-Sylhet road. The path below Syndai is a prolific place especially for the genus *Euthalia*. Porters are needed.

The Khasi Hills are so frequently mentioned by authors that the reader might have an idea that butterflies were to be seen in swarms and rare ones at that. The idea would be entirely wrong.

One of us was for many years a District Officer in the Khasia and Jaintia Hills but touring mostly on the high plateau in the cold weather, had small opportunity of collecting. In the villages on the steep slopes towards Sylhet or in the forests towards Gauhati little was seen on winter tours. Everything collected was during the march or a spare hour around the camp. After retirement recently more time has been available.

The other of us was Superintendent of Police whose duties took him along the main roads and spare hours, though infrequent, yielded more than the long journeys into the interior of the District Officer. In recent months a few days have been available.

Some purchases were made from professional collectors when this list was contemplated and from the old stock of the Himalayan Butterfly Stores, Riatsamthiah, Shillong (proprietor Mr. Sircar). His export business, suspended in the war, began again in early 1947. The butterflies were examined only after the printing of proofs of this article and final changes made are mostly indicated by 'Produced from below Cherra' or 'From below Cherra'. The months and places S., S.W. or S.E. of Cherrapunji are unknown. Mr. Sircar's men collect entirely from this area and obtain species, often in some quantity, seldom or never seen by the amateur elsewhere.

The nomenclature and numerical order of arrangement follow that in Evan's Identification of Indian Butterflies, our incentive and guide. The illustrations of every species in Antram are most helpful. We have had the luck to procure for ourselves all the standard works including Seitz but the visitor can consult Marshall and de Niceville, Bingham and Evans partly in the Public Library and partly in the Shillong Club. We were unable to visit museums.

The months given against species are merely those in which we saw them.

A list of Lycaenidae is ready and will be published later.

A1. *Troides helena cerberus*, Fd.

This species is common at Dawki. There are spring and autumn broods. Females of Var. *eumagos* Jord. are more often seen than the typical form of the female. It has been noticed in Shillong on several occasions but is not common above 3,000 feet.

Troides aeacus Fd.

This is more frequent on the Gauhati-Shillong Road than on the slopes to Sylhet and has not yet been noted at Dawki.

A2. *Byasa aidoneus* Db.

The headquarters of this very rare butterfly appear to be the Gauhati-Shillong Road. The best locality appears to be the stretch of jungle between the road and the river on the outside of the big curve just beyond Mile 41 in the Gauhati direction. Here this species flies amongst the tree trunks up to about 3 p.m. in almost any weather. A long handled net is very necessary as it flies about 14-15 ft. above the ground. There are other localities also; the best being on the west of the road at Umran Nong Kharai. The former locality is best in the middle of July; the latter in October and it appears therefore that there are two broods. It is very difficult to distinguish this species on the wing, from the next, and hence it is possible that many are missed by collectors.

Byasa varuna astorion Wd.

This is very common on the plains all over Assam but is inclined to be local. In our area it occurs below Cherrapunjee, at Margaret Falls and Burnihat in small numbers; but is quite common at Umran Nong Kharai where it flies with *aidoneus*. It flies more or less continuously from May until late in the autumn.

Byasa coon cacharensis But.

Taken at Umsaw Nong Kharai in October. Seen at Syndai. Very rare. It occurs commonly in the Garo Hills and in the North Cachar Hills on both sides of the south Khasi Hills.

Byasa aristolochiae aristolochiae F.

Common in forest areas at all times and in some years appears in considerable numbers in Shillong itself. Var *dophilus* Esp. also occurs.

Byasa latreillei kabrua Tyt.

Has been obtained in large numbers from professionals in the Naga Hills east of our area but not in the Khasi Hills. They are not high enough.

Byasa nevillei WM.

One specimen obtained from a professional; taken below Cherrapunjee. Very rare.

Byasa philoxenus polycuctes Db.

Taken below Cherra in spring and autumn. Occasionally seen on Lantana just above Burrapani. Not common.

Byasa dasarada dasarada M.

One taken at Cherrapunjee and another at Umsaw Nong Kharai in October. Occurs also at Syndai in the Jowai subdivision of the Khasi Hills. Taken by professionals below Cherrapunjee.

Byasa crassipes Ob.

One specimen has been obtained by us in the Sadiya Frontier Tract and others in Manipur by General Tytler. There would appear to be no valid reason why it should not turn up in the Jowai subdivision of the Khasi Hills.

Chilasa agestor agestor Gray.

Not rare. Many obtained from professionals, taken below Cherra.

Chilasa slateri slateri Hew.

Rare. Single brooded. In March-April at Dawki. Produced in some numbers from below Cherra. Female very rare.

Chilasa epicydes epicydes Hew.

Rare. Some produced from below Cherra, e.g. Nongpriang early Oct.

Chilasa paradoxa telearchus Hew.

Rare; but occurs in some numbers at Dawki in March and again in July and October and below Cherrapunjee in September and October, so it is at least double brooded although Seitz states it is single brooded.

Var. *danisepea*. But is very rare but is found at Mawphu in the Umiew river gorge west of Cherra and is said to be fairly common at Thiedding village.

Chilasa clytia clytia L.

Var. *dissimilis* is the common form, *clytia clytia* (the dark form) is much rarer. Obtainable both below Cherra and on the Gauhati-Shillong road in March to June and in the autumn. Very common at Dawki where specimens of var. *dissimillima* Evans, have also been obtained.

A4 *Papilio memnon agenor* L.

Common in the forest areas of the Khasi Hills and also all over the plains districts of Assam throughout the monsoon. Occurs in Shillong. All three forms of the female are found but are not rare. Some striking forms of the female var. *alcanor* Cr. have been noted including one in which the discal white spots on the hind wings have been almost completely dusted over with red scales. It is an easy species to breed and the larvae are often numerous on lemon and orange trees.

Papilio bootes bootes Wd.

Rare, taken in the gorges below Cherrapunjee, e.g. Mawphu by professional collectors.

Papilio rhetenor Wd.

Fairly common at Pynursla and Dawki, obtainable at Umsaw Nong Kharai, on the Gauhati-Shillong Road; at and below Cherrapunjee. Females, easily distinguishable by the peculiar shape of the hindwing, are rare but one or two can generally be found round the solitary lime tree in the Pynursla Inspection Bungalow compound. Numerous larvae have been obtained from this tree and a good series bred out. The dry season form is very noticeably smaller than the wet season form. The species occurs on the plains of Assam, e.g. in the forest areas bordering the Naga Hills in Golaghat, throughout the monsoon and in the autumn.

Papilio protenor euprotenor Fruh.

Common in the same localities as *memnon*, e.g. on the Gauhati-Shillong road, Umsaw Nong Kharai down to Burnihat throughout the monsoon. The larvae have frequently turned up on citrus in the Government Experimental Station at Burnihat and has frequently been bred by us from larvae found at the back of Kench's Trace in Shillong on *Xanthoxylum acanthopodium*. The females are rare.

Papilio elephenor elephenor Db.

Professional collectors have taken this species from the gorges below Cherrapunjee in May but we have not seen any in their hands. It is said to be single brooded and flies only for about three weeks.

Papilio polyctor ganesa M.

Common in the forest areas throughout the monsoon. It is not by any means rare in Shillong and we have bred a very long series from eggs and larvae found on *Xanthoxylum acanthopodium* at the back of Kench's Trace in Shillong. Included in this series is a fine variety of the female with a complete set of red lunules on the upper hindwings. We also have a male which is little bigger than a Cabbage White. The larvae are exceeding easy to rear if kept in ordinary glass jam jars provided not more than three are placed in each jar.

Papilio paris paris L.

Common in the same areas as *ganesa* but less so in Shillong. At least one specimen has been bred by us from amongst *ganesa* larvae found on *Xanthoxylum acanthopodium* at Kench's Trace in Shillong. The dry season form is very small compared with the wet season form and pygmies are not rare. A very fine series can generally be obtained in March on wet sand below Darang village on the Dawki River.

Papilio arcturus arcturus Wd.

Not nearly so common as either *ganesa* or *paris* and is not found low down. It prefers the oak woods in the Cherrapunjee and Pynursla areas where it is not very rare, but it is difficult to obtain as it flies high. Professional Cherrapunjee collectors however obtain many fine specimens including the rare females with long handled nets. It is found throughout the monsoon. Also Shillong.

Papilio krishna M.

Not seen by us in the Khasi Hills but taken by Mr. Perry, S.D.O. in the Cachar Hills to the east of our area.

Papilio castor castor Wd.

Rather rare but can generally be obtained on wet sand along the Dawki River below Darrang and Snongpedeng villages in April and in October and also Umling on the Gauhati-Shillong Road between Nonghoh and Burnihat. The females are very rare but we have obtained two at Mawsmat near Cherrapunjee in thick jungle; and one at Dawki in April. They are however quite common on lantana below the waterworks at Gauhati in the Kamrup District.

Papilio helenus helenus L.

Common in forest areas in Shillong from May throughout the monsoon. Very common and in fine condition on the Dawki river sandbanks. Larvae common on lemon and orange low down and on *Xanthoxylum scanthopodium* at Kench's Trace in Shillong.

Papilio chaon chaon Wd.

Common from Umsaw Nong Kharai to plains level on the Gauhati-Shillong road and at Dawki throughout the monsoon in the same areas as *helenus* but is rarer. It occasionally turns up in Shillong and is sometimes seen in plains villages, e.g. Silghat in Nowgong District. The dry season form is not so noticeably smaller than the wet season form as is the case with *helenus*. It is plentiful in heavy forest areas in Upper Assam but is rarely seen in open country in the plains.

Papilio polytes romulus Cr.

Very common at all times and all over Assam. All three forms of the female have been noted, but var. *stichius* F. is by far the most common. The typical form of the female and var. *cyrus* F. are both rare. Intermediate forms between the typical and var. *stichius* have been noted and a fine series of forms would not be difficult to obtain and would at the same time be most interesting to illustrate the transition from the typical form to var. *stichrus*. The larvae feed on a small aromatic shrub which is extensively used in Assam and elsewhere as a flavouring for curries.

Papilio demoleus demoleus L.

Very common indeed at low levels in orange and lemon groves on which the larvae feed at Burnihat and on the Sylhet slopes of the hills. It is very common all over Assam and interesting varieties sometimes turn up. It is very easy to rear from egg or larva. There is a difference of coloration in some specimens in which the usual clear yellow is suffused with a dark brownish tinge. Careful examination has shown however that this coloration is never found in fresh specimens and must be put down to staining due to age or other causes. Such specimens are invariably ragged and worn. They are most certainly not varieties nor can they be said to represent a separate species or subspecies.

Papilio machaon verityi Fruh.

Not seen by us in the Khasi Hills but it is known to occur at Suroj in Manipur and is almost certainly to be found in the Naga Hills but is unlikely to turn up in the Khasi Hills unless it is introduced and establishes itself on carrot in the extensive market gardens in Shillong.

A5. *Pathysa eurous sikkimica* Heron.

Taken at Umtyngar gate, 14 miles from Shillong, on the Shillong-Sylhet Road. It is not rare at Laitlyngkot in the valley of the small stream below the Inspection Bungalow but is difficult to secure owing to the speed at which it flies.

As with all *Pathysa*, females are very rare.

Pathysa agetes agetes Wd.

Not rare on wet sand at Dawki in the area of Darrang village but numbers vary very considerably from year to year.

Pathysa aristus anticrates Db.

One obtained on wet sand at Darrang village on the Dawki River in April and one at plains level below Cherrapunjee, also in April.

Pathysa antiphates pompilius F.

Common in the low hills along the Gauhati-Shillong Road and is numerous at Dawki along the river on wet sand in March and April; available below Cherrapunjee at plains level throughout the monsoon.

A6. *Zetides cloanthus* Wd.

Found occasionally in Shillong in April. Is fairly common on the top of the Peak and on lantana blossom well above Kench's Trace. Is taken by professional collectors in some numbers in the Cherrapunjee area but is rarely seen below 3,000 ft. It flies high round the tops of oak trees and is difficult to secure except with a net having at least a 12 foot handle. It appears to be rare, but this is due to its habits and is actually fairly common. Mr. Perry reports it to be rare in the north Cachar Hills which is a very fine collecting ground. We have noticed it to be very common on Birch Hill in Darjeeling.

Zetides sarpedon sarpedon L.*Zetides doson axion* Ed.

Both are very common along the river at Dawki on wet sand in March and April and from Umsaw Nong Kharai to Burnihat on the Gauhati-Shillong Road in spring and autumn.

Zetides euryptylus cheronus Fruh.

Not common like *doson*. In same places.

Zetides bathycles chiron Wall.

On wet sand along the river at Dawki in April but is not common.

Zetides agammemnon agammemnon L.

Not scarce on wet sand along the river at Dawki in April and obtainable on lantana blossom on the Gauhati-Shillong Road, but not often seen. It appears to be commoner in the Golaghat forest areas towards the Naga Hills than in the Khasi Hills. Syndai in our area is, however, a good locality, in October.

A7 *Paranticropsis macareus lioneli* Fruh.

The males are common along the river at Dawki in March and April. No females have been taken.

Paranticropsis xenocles xenocles Db.

Less common than *lioneli* but obtainable in fair numbers along with that species at Dawki in April and occasionally at Burnihat along the Umran River in May and June. Only two females have been obtained, both from the area below Cherrapunjee in dense forest. Many produced from below Cherra.

Paranticropsis megarus megarus Wd.

Common at Dawki along the river in April 1940 but not seen there since. One obtained from a professional probably from the area below Cherrapunjee in May. Only one female was taken, to the North of the District in 1939.

A8 *Meandrusa gyas gyas* Wd.

Many seen near the Pynursla Inspection bungalow in April, but keeps to the tops of oak trees requiring a net with a very long handle. One taken in April in Jirang State in low hills on the Kamrup border. Professionals catch them in large numbers including a few of the rare females, in the Cherrapunjee area. We have not seen it on the plains; but the late Mr. Deeks took it at Mariani, near the railway station, in Upper Assam.

Meandrusa payeni evan Db.

At Umsaw Nong Kharai on the Gauhati-Shillong Road in April. Settles on plants of Lady's Fingers (*Hibiscus esculenta*). Many have been seen on grassy slopes at Poontoong. Taken in April at Lawbah on the slopes towards Sylhet. Professionals take many in the area below Cherra. The females are very rare.

A9 *Teinopalpus imperialis imperialis* Hope.

Obtainable at Laitryngew and Laitlyngdoh and neighbourhood on the Cherrapunjee Road on fine days in May and early June especially on the bare tops of the hills which have trees on their lower slopes. They fly from dawn till

10 o'clock after which they retire to tree tops. Males occasionally settle on stones and are easily taken, females are rather rare.

The Khasi Hills variety is a new subspecies which has not yet been described.

As this butterfly is confined only to a particular area in the Khasi Hills, it provides an export business for professionals, who may cause its extinction.

A10 *Leptocircus curius* F.

Found at Poontoong on the Shillong-Sylhet road and obtained by professionals in numbers towards Sylhet below Cherrapunjee. We have taken one or two at Syndai in October. Taken by Mr. Delanougerede at Umsaw Nong Kharai (Mile 36) on the Gauhati-Shillong road. It is rare and very local. Mr. Perry saw it at only one place in the North Cachar Hills. One of us saw it in large numbers in the Gildarri Forest Reserve at plains level near Golaghat in the Sibsagar District in early October.

Leptocircus meges, with its green band, has only been taken by us in the Naga Hills. It does not occur in the Khasi Hills.

A11. *Armandia lidderdalei* Atk.

Does not occur in the Khasi Hills. Taken by us only in the Naga Hills in June. Kirbari in the Naga Hills in June is an excellent locality.

PIERIDAE

B1. *Leptosia nina nina* F.

Very common in the orange groves at Dawki, upstream from Darrang village, throughout the monsoon. Some are very small indeed. Easily mistaken for a moth as it flutters in low herbage. Noticed also at low levels on the Gauhati-Shillong road.

B4 *Pieris napi montana* Ver.

Pieris canidia indica Evans.

Pieris brassicae L.

All these are common in Shillong and other parts of the district from April onwards.

Brassicae is a pest in market gardens. It is curious however that it is common at Sylhet, in Sylhet district, to the south of the Khasi Hills but has not been noticed at Gauhati, in Kamrup district north of the Khasi Hills. Although General Tytler reported its presence in considerable numbers in Manipur, it is unknown in Lakhimpur district. Members of the cabbage family are widely cultivated in all these areas and this somewhat curious density of distribution is remarkable. Easy to breed but may be parasitised.

Evans in his 'Identification of Indian Butterflies' has stated that the female of *Pieris napi montana* is 'yellow and often much darkened'. This is, however, not correct so far as the Khasi Hills are concerned, at least. We have dark females as well as many lightly marked specimens but have never met with a yellow female amongst the many hundreds we have examined.

B5. *Aporia agathon agathon* Gray.

In Shillong in May and June and Pynursla in oak woods on the Shillong-Sylhet road in April. Not rare.

B6. *Delias agostina* Hew.

Not rare on wild blossom at Mile 45 on the Gauhati-Shillong road at the end of November including many fine dark females. It is usually hard to get as it keeps to the tree tops.

Delias hyparete hierte Hub.

Not common. A few in the same locality as *agostina*; also from Cherra.

Delias belladonna lugens Jord.

Not rare on the Peak in April and June and again towards the end of the monsoon on *Buddlea* blossom.

Delias berinda berinda M.

A few are generally to be obtained round the Inspection Bungalow at Jowai in June.

Delias descombesi leucacantha Fruh.

Common all over the district, particularly at Mile 45 on the Gauhati-Shillong road on wild blossom in November.

Delias aglaia L.

Common all over the district except on the high treeless plateau.

Delias thysbe pyramus Wall.

Not rare on wild blossom at Mile 40 and 45 on the Gauhati-Shillong road and elsewhere in November. Can be confused with *aglaia* in flight. It has also been taken at Syndai in October.

B7. *Prioneris thestylis* Db.

Taken at Dawki on wet sand. Occasional specimens are to be found all over the district except on the high treeless plateau throughout the monsoon. Specimens in fine condition including the rare females are not rare on *Buddlea* blossom along the Shillong-Sylhet road in the Mile 21 area and towards Pynursla in October and November. Plentiful at Nongpriang below Cherra, September.

Prioneris clemathe Db.

Very rare but we have obtained this species on wet sand upstream from Dawki in October and November. It has also been noted in lots from professionals who have obtained it below Cherrapunjee.

B9 *Huphina nerissa phryne* Fruh.*Huphina nadina nadina* Luc.

Dawki upstream along the river. The latter is the commoner of the two species. The males are met with on wet sand and an occasional female is to be found on lantana at somewhat higher levels. It has been taken in Shillong in August and at Syndai.

B10. *Appias lalage lalage* Db.

Common on wet sand along the river above Dawki in March and April. Not rare in Shillong during the monsoon where many fine examples of the female are obtainable. In late October and November a good series can be obtained on *Buddlea* on the Shillong-Sylhet road between Mile 21 and Pynursla. A number of specimens with yellow on the underside of the hindwing have been noted. This form is not noted by Evans in his 'Identification of Indian Butterflies'.

Appias indra indra M.

Occasional specimens can be picked up from amongst droves of *lalage* sipping wet sand along the river above Dawki. We have also recorded it below Syndai in October.

Appias libythea olferna Swin.

Is very uncommon but we have one specimen taken in Shillong in June and another at Dawki in March. Specimens of both males and females have however been obtained by us at Burnihat near the bridge in early June.

Appias lyncida hippoides M.

The male is very common everywhere along rivers and also comes as high as Cherrapunjee. Fond of wet sand. The female is not uncommon in the orange groves at Dawki.

Appias albina darada Fd.

Somewhat scarce but a few can generally be obtained while sitting on wet sand on the river bank above Dawki in company with *lalage* and *hippoides*. It comes as high as Cherrapunjee in large numbers in October to blossom. A number of females, which are very rare, have been obtained in Shillong and also at Cherrapunjee.

Appias nero galba Wall.

The dealer, Shillong, got very rarely from Cherra in past years. We took one at Piphima, Naga Hills. Lt.-Col. Betts saw a number at Lumding, Now-gong district, in September.

B11 *Catopsilia crocale* Cr.

Common towards Kamrup. The female is very variable and some interesting varieties have been obtained through breeding large numbers of larvae, which sometimes completely defoliate *Cassia* trees. One of these varieties corresponds almost exactly to a form usually found in the Philippines.

Catopsilia pomona F.

Common towards Kamrup but rare towards Sylhet.

Catopsilia pyranthe mina, Herbst.*Catopsilia florella gnoma* F.

Not rare at plains level on the Sylhet side of the Hills. Not so common towards Kamrup.

B12 *Gandaca harina assamica* M.

At Burnihat and Nongpoh on the Gauhati road in April; also on the river upstream from Dawki in March and April and again in the autumn. Fond of sitting on wet sand and near puddles in the jungle. The white female is not common. It is also available at Syndai.

B13. *Dercas verhuli doubledayi* M.

Rare. A few were taken on the Gauhati-Shillong road in September. A few obtained from Cherrapunjee professional collectors and caught by them low down below Cherrapunjee. It is much more common in Sikkim and along the Kobo-Pasight road on the N.E. Frontier of Assam.

Dercas lycorias Db.

Several specimens taken at Laitlyngkot 6,000 ft. in June and July and also on the Causeway along the Shillong-Sylhet road. A few specimens obtained at Mawsmi near Cherrapunjee in early March. A number were obtained from Cherrapunjee professional collectors. It is very easy to mistake this species on the wing for a common *Terias* and great care is necessary to avoid missing this species as a result of this similarity. It is not common.

B15. *Terias libythea* F.*Terias laeta laeta* Bdv.*Terias blanda silhetana* Wall.*Terias hecabe hecabe* L.

The first two and the last are very common in Shillong and all over the high plateau, also at low levels.

Silhetana is the prevailing form at Dawki in autumn.

With regard to *silhetana*, we have obtained this at Dawki in December, but is probably much more widely distributed throughout the monsoon at low levels.

B16. *Colias croceus fieldii* Men.

Is common on the Peak at Shillong and at Laitlyngkot. It is found also in Shillong itself and at Mawflang but is not so numerous at the latter place. The larvae feed on a small blueflowered vetch-like plant but females in confinement lay freely on clover. We have secured one white female of this species.

B17. *Ixias pyrene pirenassa* Wall.

Is found in Shillong occasionally but is mostly seen at low levels on the road to Gauhati and the slopes towards Sylhet. Good specimens of the female are hard to obtain.

B18. *Hebomoia glaucippe glaucippe* L.

Occurs in the river gorges leading to the Sylhet plains and at low levels on the road to Gauhati throughout the rains. Many good specimens can be obtained during the late monsoon on wild balsam in the orange groves near Dawki.

B20. *Pareronia avatar avatar* M.

We have obtained one specimen of this butterfly, rare in Assam, at Gauhati in Kamrup district on lantana flowers and there is therefore no reason why it should not also occur in the low hills of our area to the north along the Kamrup border. Not on Sylhet side. Mr. Perry took it in Garo Hills.

DANAIDAE

C2. *Danaïs aglea melanoides* M.

Common all over the district.

Danaïs tytia tytia Gray.

Common all over the district above 3,500 feet. It is plentiful at Cherrapunjee and along the road to Sylhet between Mile 21 and Pynursla. Some interesting varieties have been obtained at Laitlyngkot, a few of which are indistinguishable from the subspecies *sita*, Koll and others show the complete transition from *sita* to the true *tytia*.

Danaïs limniace mutina Fruh.*Danaïs melissa septentrionis* But.

Both occur all over the district but *mutina* is rarer.

Danaïs melaneus plateniston Fruh.

Is found in the same localities as *tytia* but is rarer and also occurs lower down in the hills.

Danaïs plexippus L.

Very common all over the district, particularly in the Dawki area where many fine specimens are available in a reed bed below Darrang village.

Danaïs chrysippus L.

Common all over the district but is not so often met with as *plexippus*.

C3. *Euploea mulciber mulciber* Cr.

Very common all over the district. Also found in Shillong. We have some very small examples of the female.

Euploea core vermiculata But.

Common at low levels. The larvae feed on oleander.

Euploea alcatheae doubledayi Fd.

Numerous at Syndai, October. Also from below Cherra. Scarce elsewhere.

Euploea deione deione Wd.

Fairly common on sandbanks at Dawki and at mile 40 G. S. road.

Euploea harrisi hopei Fd.

Not rare. Dawki sandbanks; below Cherra; G. S. road.

Euploea diocletiana diocletiana F.

Common in forest areas below high plateau, especially at Margaret Falls on G.S. road where it sits on tarmac. We have not distinguished *ramsayi*.

Euploea klugii maccllellandi M.

Somewhat rare. Below Syndai April and October and at Dawki and from below Cherra.

Euploea midamus splendens But.

It is said to occur fairly plentifully here but we have obtained only one at Dawki in August. N.B.—We have seen one *Euploea* not blue glossed and almost certainly *Euploea crassa crassa* flying over sand below Darrang village near Dawki, but as we failed to take it we cannot state the occurrence of this species here.

SATYRIDAE

D1. *Mycalesis anaxias aemata* Fruh.

A few to be found in orange groves on the river near Dowki in October (worn). Below Syndai and rarely produced from below Cherra. Not seen elsewhere.

Mycalesis francisca sanatana M.

A few obtained at low levels. At Umran mile 42 G.S. road 2,300 feet October.

Mycalesis persius blasius F.

Taken on plains Upper Assam (Jorhat) but search for it here has so far been unsuccessful.

Mycalesis mineus mineus L.

Very common at all levels.

Mycalesis visala visala M.

Probably uncommon. Our specimens are few. *Khasia khasia* must occur here but we have no specimen.

Mycalesis malsara M.

One at Syndai in October. The dealer says rarely taken below Cherra. We got at Piphima, Naga Hills, 3,000 feet, October.

Mycalesis malsarida But.

Not rare at Dawki in October. Also from below Cherra. One at Mile 35 G.S. road. Seems scarce.

Mycalesis mestra mestra Hew.

Produced by professionals from Cherra. Rare.

Misenus and *nicotia* are recorded by Bingham from the Khasi Hills.

D3. *Lethe sidonis sidonis* Hew.

We have a long series of this species from various portions of the high plateau including Shillong, particularly from the valley of the small stream below Laitlyngkot Inspection Bungalow. We have referred the specimens to the above but it is virtually certain that they belong to a new and undescribed sub-species in view of the fact that all the ocelli below are disintegrated in all specimens, whereas this is not so in *sidonis* from Darjeeling.

Lethe sura Db.

We have obtained several specimens in various parts of the district, most of them on the Shillong-Sylhet road between Laitlyngkot and Pynursla where it is at times not uncommon but flies high, seldom settles and is therefore difficult to secure.

Lethe europa niladana Fruh.

At low levels. Not rare but seldom seen in the jungle.

Lethe rohria rohria F.

In Shillong gardens, at Barapani below Shillong, Dawki, Burnihat and Nongpoh.

Lethe confusa gambara Fruh.

Common at low levels Assam Valley and Sylhet sides.

Lethe verma sintica Fruh.

Common in Shillong from April onwards and on high plateau.

Lethe insana dinarbas Hew.

Rare. It flies high round the tops of oak trees, e.g. round the Inspection Bungalow, Pynursla. Also from Cherra.

Lethe latiaris Hew.

Rare. In woods near Mawsmal below Cherra. At mile 40 G.-S. road November and taken in Shillong.

Mekara zuchara Fruh.

Not rare. Nongpoh, Burnihat, Dawki, Syndai. May to October.

Lethe chandica flanova Fruh.

Burnihat in April and two from below Cherra. Scarce.

Lethe kansa M.

Not rare. Nongpoh in May, Syndai in October, on slopes to Sylhet 2,000 feet. April and from below Cherra.

Lethe sinoria Hew.

Not rare on Sylhet road between mile 21 and Pynursla. Also in wood beyond Mawsmal below Cherra.

Lethe pulaha pulahoides M.

Recorded by Bingham from here.

Lethe bhadra M.

The dealer says he gets from Cherra very rarely.

Lethe yama yamoides M.

Not rare at Mawphlong 17 miles from Shillong in May. At Shillong April—May and Shillong peak and Laitlyngkot, 6,000 feet.

D5. *Orinoma damaris* Gray.

Common at Mawsmal, near Cherrapunjee, chiefly in the autumn. It is met with above 4,000 feet sparingly in most oak woods but not in the open.

D12. *Erebia annada oriza* M.

Very common on the Cherrapunjee road and on the road to Sylhet between Laitlyngkot and Mile 26 during the monsoon. We have obtained a long and fine series.

D14. *Ypthima baldus baldus* F.

Very common, particularly at low levels.

Ypthima hubneri hubneri Kirby.*Ypthima sakra austeni* M.

Common high plateau and Shillong. *Hubneri* on plains also.

Ypthima nareda newara M.

Ypthima lycus lycus deN.

In Shillong and over high plateau. *Newara* also on Upper Assam plains, e.g. Luming. *Lycus* is peculiar to these hills. The male differs from *newara* in having, like *baldus*, a patch both sides median vein. To detect this needs close scrutiny.

Ypthima methora methora Hew.

At Dawki in October and a few from below Cherra. Seems rare.

D15. *Zipoetis scylax* Hew.

Rare. One at Mile 36 G.-S. road in September; at Gauhati in April and several from below Cherra.

D16. *Orsotrioena medus medus* F.

Very common in forest areas below high plateau.

D18. *Ragadia crisilda crisilda* Hew.

In a wood west of the road beyond Mawmai below Cherra. In dense shade at Mile 39 G.-S. road in October. Produced from below Cherra in some numbers. One at Dawki November. Not seen elsewhere.

D20. *Neorina patria westwoodi* M.

We have obtained numerous specimens from Shadwell's Wood at Cherrapunjee in September. It is a common species in the hands of Cherrapunjee professional collectors.

D21. *Anadebis himachala* M.

Not rare low down in the orange groves near Dawki and in the valley of the Umran river south of Burnihat on the Gauhati-Shillong Road. It is also to be found in woods at Syndai and at Miles 36-40 on the Gauhati-Shillong road.

D22. *Melanitis leda ismene* Cr.

Very common at low altitudes, becoming rarer as the altitude increases; but is available in Shillong. The wet season form does not apparently occur at all above 4,000 feet, where the ordinary dry season form occurs during the monsoon.

Melanitis phedima bela M.

Taken at Elephant Falls above Shillong and at Cherrapunjee, particularly in the neighbourhood of Mawmai. Careful search will generally result in seven or eight being obtained each season.

Melanitis zitenius zitenius Herbst.

Not rare in the area of miles 36-40 on the road to Gauhati and has also been secured by us in the Mawmai woods near Cherrapunjee, and at Syndai in October.

D25. *Elymnias hypermnestra undularis* Drury.

Very common at low levels, particularly in the orange groves near Dawki but good specimens of the female are rare. It is also difficult to avoid damaging them in the net as the wings of the female appear to be very brittle. Also common at Umling on the Gauhati Road.

Elymnias nesoea timandra Wall.

Not rare in the orange groves at Dawki in October and November. The food plant appears to be the areca nut which is also grown very extensively at Dawki. Also noted at Umling on the Shillong-Gauhati Road.

Elymnias malelas malelas Hew.

We have obtained it along the river above Dawki on the jungle paths and also at Umling on the way to Gauhati. It is common on the plains.

Elymnias patna patna Wd.

We have secured several specimens in the orange groves at Dawki and in the oak woods at Mawsmat near Cherrapunjee, but it is very seldom seen.

Elymnias vasudeva deva M.

Seen once in the orange groves at Dawki.

Elymnias penanga chelensis deN.

Antram records this as a rarity in the Khasi Hills but we have not seen it.

AMATHUSIIDAE.

E2. *Faunis arcesilaus* F.

Not rare in the undergrowth along the paths and streams in the orange groves upstream from Dawki and at Syndai in October.

Faunis eumeus assama Wd.

Not rare during the middle and late monsoon in the oak woods at Mawsmat near Cherrapunjee.

E4. *Sticopthalma camadeva nicevillei* Roth.

We have noticed enormous numbers in the hands of Cherrapunjee professional collectors who undoubtedly obtain this species low down below Cherrapunjee on the slopes towards Sylhet. We have ourselves secured this beautiful species in bamboo jungle on the banks of the Uman River just south of Burnihat on the road to Gauhati in June.

Sticopthalma sparta tyleri Roth.

Lt.-Col. Betts very kindly presented us with a specimen of this beautiful butterfly obtained by him near Haflong in the North Cachar Hills, so there would appear to be no reason why it should not occur in the east of the Jowai subdivision of the Khasi Hills towards Hot Springs.

E5. *Thaumantis diores* Db.

We have seen many specimens with professional Cherrapunjee collectors obtained from the borders of Sylhet. We have ourselves secured it in the orange groves at Dawki and at Margaret Falls on the road to Gauhati during the monsoon in June and again in November and also at Umling and Umsaw Nongkharai in thick forest in the evenings. It is common at Syndai, in the Jowai subdivision in October.

E8. *Amathusidia amythaon* Db.

One only taken in the orange groves near Dawki. Very rare here. Most *Amathusiidae* come to over-ripe bananas hung up with skins partly removed.

E10. *Discophora tullia zal* Wd.

In all forest areas but seldom seen unless bait is used.

E11. *Enispe euthymius* Db.

Some are produced by professionals from the area below Cherra. At Mawdon State, 2,000 feet, S.W. of Cherra in April. At Mile 36 G.-S. road 1,900 feet. Rare.

Enispe cycnus cycnus Wd.

Mile 36 G.-S. road and one from Cherra area. Rare.

NYMPHALIDAE.

F1. *Charaxes polyxene hierax* Fd.

Also the varieties *hipponax* and *pleistoanax*. (Var. *khasianus* of *pleistoanax* has the discal band uphind slightly blue). Not rare in forest areas Assam and Sylhet sides and rarely in Shillong.

Charaxes aristogiton Fd.

Dowki March and November. Also rarely from below Cherra. Scarce.

Marmar Wd.

On G. S. road May and October. Also from below Cherra. Scarce.

Charaxes kahruha M.

Two produced from Nongpriang below Cherra early October. Rare.

Charaxes fabius sulphureus Roth.

Very rare here. One taken Nongpoh and one at Umsaw Nongkharai G.S. road. In Ghiladhari forest Golaghat, Upper Assam, October. Not rare along rail at Langting, N. Cachar Hills in October.

F2, *Eriboea schreiberi assamensis* Roth.

One got from a professional from the slopes to Sylhet.

Eriboea athamas athamas Db.

Common in forest areas down to plains. From March to end of year.

Eriboea arja Fd.

Flies with *athamas*.

Eriboea dolon magniplaga Fruh.

Eriboea delphis Db.

Both these rarities obtained by professionals below Cherra. The latter in the Mawphu area and in quantity. *Delphis* was seen by us in Ghiladhari forest, Golaghat, Upper Assam in October.

F7, *Apatura ambica ambica* Koll.

Is obtainable in fair numbers at Margaret Falls (Mile 40) on the Gauhati-Shillong road and on the Umran river in the same area from May till June and again in October. *Sordida* is recorded by Antram from the Khasi Hills, but we have not seen one.

Apatura parvata M.

This species is generally available between Mile 21 and Pynursla on the Sylhet road on fine hot days in September on the tarmac and is easily caught.

Apatura parisatis parisatis Wd.

Is met with fairly frequently at Dawki and at other places on the rivers where these emerge from the hills on the Sylhet side. Taken by us in August at Dawki and in October at Syndai. The female is rare.

F8, *Herona marathus marathus* Db.

One pair taken at Mawdon, 2,500 feet south-east of Cherrapunjee in April. One also seen at Poongtoong. Also noticed at Mile 36 on the Gauhati-Shillong road and taken at Burnihat plentifully and at Dawki in October.

F9, *Sephisia chandra* M.

Many males and one female obtained from Cherrapunjee professional collectors and a female was caught by us near Soharim on the Shillong-Cherrapunjee road in October. One male has also been taken in Shillong in June. A specimen was taken by another collector at Mile 36 on the Gauhati-Shillong road during the monsoon.

F10, *Euripus consimilis consimilis* Wd.

One obtained on the Umran river south of Burnihat in March.

Euripus halitherses Db.

We have obtained several males at Dawki in the spring and two forms of the female have been secured from Cherrapunjee professionals. Not uncommon on the Gauhati-Shillong road below Mile 40 in April and May and again in July. Females are rare but specimens of the two forms of the female have also been taken in the latter locality (Umran Nongkharai) by Mr. Delanougered.

F11. *Diagora persimilis persimilis* Wd.

One from below Cherra, from the dealer. Rare.

F12. *Hestina nama* Db.

Fairly common near the 25th mile on the Sylhet road and at Cherrapunjee in the Circuit House compound in October. Also taken near the tea room at Nongpoh in June.

F15. *Penthema lisarda lisarda* Db.

We have obtained one specimen of this rare butterfly from a Cherrapunjee professional, one was taken by us at Nongpoh in August, another at Margaret Falls (Mile 40) on the Gauhati road in April and a third in August. It was also obtained near Haflong in the adjoining North Cachar Hills. One was sent to us this year from the Stillwell Road in N. Burma.

F16. *Dichorragia nesimachus* Bdv.

Nongpoh and Burnihat, June, August and autumn. At Dowki and from below Cherra. Uncommon.

F17. *Stibochiona nicea nicea* Gray.

In the low hills towards Kamrup (Jirang State) in April. We have also obtained it at Dawki where it is common during the rains, at times sitting low down on the trunks of orange trees. Common Syndai (October) and Cherra.

F18. *Euthalia lepidea lepidea* But.

The only common *Euthalia*. Plains and forest areas below plateau.

Euthalia julii adima M.

Fairly common at Dowki spring to autumn and below Cherra.

Euthalia julii sedeva M.

Ditto. Flies with *adima*.

Euthalia jahnu jahnu M.

Many worn females Dowki November but no male. Many females from Cherra in dealer's stock but only two males. Male very like *adima*.

Euthalia kesava kesava M.

Six males Dowki, August, November, and one female. One pair from Cherra.

Euthalia telchinia Men.

Two males and three females from below Cherra.

Euthalia garuda garuda M.

Two females Dowki, May and December. A pair from below Cherra.

Euthalia jama jama Fd.

Three at Dowki, November, and a few from below Cherra. One female.

Euthalia phemius Db. and Hew.

Fairly common in a small wood, Mawsmat below Cherra. Males sit on telegraph wires, females on oaks. A few produced yearly from Cherra.

Euthalia lubentina indica Fruh.

Males not rare, often sit on tarmac. Females very scarce and in dense jungle in small valleys. Both Assam and Sylhet sides.

Euthalia franciae rajah Fd.

We have taken it in fair number on oak trees in Cherra area, e.g. just below the control gate and just beyond Mawsmal. Professionals take in some quantity.

Euthalia duda Stg.

Several obtained from professionals taken below Cherra.

Euthalia sahadeva nodaka Fruh.

Not rare on slopes towards Sylhet. Taken in Shillong in June.

Euthalia iva M.

A perfect specimen of this extremely rare butterfly was caught by Lt.-Col. Betts just east of our area and is now in the senior author's collection. Mr. St. J. Perry took another in the North Cachar Hills. So it may occur in the eastern Jaintia Hills.

Euthalia evelina derma Koll.

Specimens of this beautiful butterfly have been obtained by us not only at Dawki in August, October and November, but also in the Valley of the Umran river, above Burnihat, on the Kamrup side.

Euthalia teuta teuta Db. & Wd.

This species has turned up fairly frequently from the slopes towards Sylhet and we have obtained several from professional collectors.

F19. *Adolias cyanipardus* But.

Many specimens seen and obtained at Dawki and Syndai on the Sylhet side in March, August and November and in the valley of the Umran River on the Kamrup side, and taken at Burnihat in June. The females are always damaged, due to the dense jungle in which they fly.

Adolias khasiana khasiana Sivin.

Many specimens obtained by professional collectors from the borders of Sylhet below Cherrapunjee. Taken by us Dawki, November. It has also been found in thick forest near Mile 36 on the Gauhati-Shillong road and at Nongpoh.

F20. *Parthenos sylvia gambrisius* F.

Common in open spaces and along the banks of the river at Dawki in March-April and again in October. It has also been seen sparingly on the Gauhati road. At least one specimen has come to notice in Shillong. It is very difficult to get good specimens. It is obtainable during the same periods at Syndai and below Cherrapunjee also.

F21. *Lebadea martha ismene* Db. & Hew.

Very common in the orange groves along the river upstream from Dawki and Syndai in April and more or less throughout the year. It is also to be found in the woods at Mawphlong in May but is rarely seen in Shillong. It is not found on the high treeless plateau.

F22. *Neurosigna doubledayi doubledayi* Wd.

Rare; we have caught and seen a few specimens on laurel blossom along the stream just beyond the Mawsmal near Cherrapunjee in September. Specimens have also been obtained in considerable numbers from professional collectors which they have taken on the slopes towards Sylhet. The females are very rare and seldom come down to ground level inside the dense jungle in the same vicinities as the males are found. The senior author has obtained two females in the little wood just beyond Mawsmal village near Cherrapunjee.

F24. *Limenitis austenia austenia* M.

Not actually taken by us but many specimens including one of the rare females have been obtained by us from professional collectors which they had obtained low down below Cherrapunjee. It is obtainable in the autumn also.

Limenitis zayla Db. & Hew.

Shillong in May but not seen elsewhere on the high plateau. Many specimens were obtained from Cherrapunjee professionals. It flies also in September and October. Rare.

Limenitis daraxa Db. & Hew.

Very common everywhere from 4,000 feet downwards throughout the summer. It is fond of sitting on roads and three or four can always be obtained on the tarmac at Margaret Falls on the Gauhati road and on the road near Mawsmal village close to Cherrapunjee.

Limenitis procris procris Cr.

Very common and is found along with and has the same habits as *daraxa*. It is also a filth eater. One of our specimens measures only 50 mm.

Limenitis dudu Wd.

One taken in March at Lawbah, 2,000 feet on the slopes to Sylhet, two specimens taken at the foot of the Peak, Shillong in August, one at Pynursla in October and three at Mawsmal near Cherrapunjee, two of which were obtained in March and one in October. Antram says *durga* occurs here.

Limenitis zulema Db.

Many specimens seen in the hands of professional collectors at Cherrapunjee. Not seen by us anywhere on the wing save at Syndai in October.

F25. *Pantoporia nefte inara* Db.

Fairly common at Dawki in November and since it has also been obtained at Gauhati in September it must also be obtainable on the slopes of the hills towards Kamrup. Also noted at Syndai in October. Many from below Cherra.

Pantoporia cama M.

Cherrapunjee in March and Margaret Falls near Umran on the Shillong-Gauhati road in October, not rare. Many from below Cherra.

Pantoporia selenophora selenophora Koll.

This species is common and we have obtained it near the Circuit House at Cherrapunjee in October and at Mawsmal also near Cherrapunjee in March. It is common at Margaret Falls near Umran on the Gauhati-Shillong road in October and like the males of *cama* it is fond of sitting on the hot tarmac. These various species which like to sit on the tarmac must be looked for there before mid-day since after that time the surface gets too hot for them. *Selenophora* is also obtainable at Dawki in February and many other localities.

Pantoporia zeroa M.

This is also a fairly common species on the tarmac at Margaret Falls on the Gauhati-Shillong road (in the Mile 40 area) in October. This month appears to be best in the Khasi Hills for obtaining good specimens of the genus *Pantoporia*.

Pantoporia opalina orientalis El.

Common on the 'Causeway' on the Shillong-Sylhet road in October. It is also obtainable on fine days in June and October at Cherrapunjee. It is noticeable that the specimens of *orientalis* from the Khasia Hills are much darker than those from Darjeeling.

Pantoporia ranga ranga M.

This is an uncommon species of which it is difficult to get good specimens. The best locality is Dawki in November but the tarmac at Margaret Falls also attracts it in October. Taken at Nongpoh and Syndai in the same month.

Pantoporia pravara acutipennis Fruh.

This is an uncommon species but the tarmac at Margaret Falls generally attracts a few in July and August. Two at Dowki in November.

Pantoporia asura asura M.

We have obtained four specimens of this rare species at Mawsmat near Cherrapunjee in March and one at Syndai in October and a few from below Cherra.

Pantoporia perius L.

Common everywhere below about 3,000 feet but has also been taken in Shillong in July.

F26. *Neptis columella ophiana*.

One specimen obtained at Dawki in November and one at Umran Nong Kharai in October. It must be more common than this leads one to suppose. We have also obtained two at Syndai in October.

Neptis magadha khasiana M.

Rare. Umran, Mile 42 G.S. road October, Dowki one April and one November. Also one below Cherra.

Neptis hylas astola M.

In higher hills. Common.

Neptis hylas adara M.

In lower hills and plains. Common.

Neptis soma soma M.

Not rare. Our specimens are from Cherra.

Neptis nandina susruta M.

Very common, specially at low levels.

Neptis yerburyi sikkima Evans.

Not common like *nandina*. On Assam and Sylhet sides.

Neptis sankara quilla Swin.

One from Nongpriang below Cherra, early October.

Neptis vikasi pseudovikasi M.

Not rare. In forest areas below high plateau.

Neptis cartica cartica M.

Not rare. Our specimens are from Cherra.

Neptis miah miah M.

Rare. Margaret Falls, Mile 40 G.S. road, one in July, one in December. One from below Cherra.

Neptis antilope antilope Leech.

Very rare. One taken by us in Shillong in October.

Neptis viraja viraja M.

Uncommon. One at Dowki March, others from below Cherra.

Neptis hordonia hordonia Stoll.

Common through the year. Also in Shillong.

F27. *Cyrestis cocles cocles* F.

Many specimens obtained from Cherrapunjee professional collectors which are said to have been obtained in the Shella area.

Cyrestis thyodamas thyodamas Bdv.

Found at the foot of the hills on the Sylhet border in April. We obtained numerous specimens at Dawki in March and November. Many specimens have also been seen and obtained at Cherrapunjee in June. At least one specimen was bred by us in April from a larva found in March at Poongtoong on the Shillong-Sylhet Road. One or two have been taken at Syndai in October.

F28. *Chersonesia risa* Db. and Hew.

One taken at Burnihat in July. A number obtained at Dawki and some also at Mile 36 on the Gauhati-Shillong road. Several taken at Syndai in October.

F29. *Pseudergolis wedah* Koll.

This species has been noted at plains level on the Kamrup border in April and has been obtained by us on the warm tarmac below Pynursla on the Sylhet road at the end of September and in October. It seems to be very uncommon in Assam. Several produced from below Cherra.

F30. *Hypolimnias bolina* L.

Generally common in suitable open localities and along hedges at plains level. Both sexes are very common at Dibrugarh in Upper Assam.

Hypolimnias missippus.

We took one male in Gauhati so it must occur in the foothills.

F33. *Doleschallia bisaltide indica* M.

Seen in Shillong in September, and some obtained at Dawki in July and November. Others seen at Dawki, Laitlyngkot and Poontoong.

F34. *Kallima inachus inachus* Bdv.

Common at plains level particularly at Dawki and also on the Kamrup side. Several obtained by us at Mawmai near Cherrapunjee and at Mile 36 on the Gauhati-Shillong road in June and October.

Kallima alompra M. (*knyveti* deN.)

This species was taken by one of us in the Nambor Forest at the foot of the Naga Hills but it does not occur in the Khasia Hills, according to our information.

F35. *Precis hierta magna* Evans.

Common from Nongpoh to plains level towards Kamrup. Sometimes seen in Shillong.

Precis orithya ocyale Hut.

Very common all over the high plateau at all times and occasionally lower down. At dusk the larvae may be found climbing up the grass at Cherrapunjee and can easily be reared on a small weed which looks very like the English plantain by which method many fine specimens with occasional varieties can be obtained.

Precis lemonias lemonias L.

Very common low down and particularly so in the valley of the Umran river south of Burnihat and throughout the plains of Assam.

Precis almana almana L.

Common in the same localities as *lemonias*.

Precis iphita iphita Cr.

Common at Elephant Falls above Shillong, but very rarely seen on the high plateau: common at low levels on the Kamrup side. It is very common all over Assam.

Precis iphita iphita Cr.

Common everywhere in the district including Shillong.

F36. *Vanessa indica indica* Herbst.

The imagines of this species are not very often seen but the larvae are very common on nettles at Mawplang in August and are very easy to rear. Some interesting aberrations have been obtained, details of which it is proposed to publish later. Among the more common aberrations is one which approaches *nubicola*, in the fusion of the two lower central black spots which are also confluent with the basal dark areas of the fore wing. This aberration is however without the black termen on the hind-wing of *nubicola*. One of us has also secured a very small specimen of this species which measures only 45 mm. against the normal 65 mm.

Vanessa canace canace L.

Common all over the district. Good specimens are however scarce. The larvae feed on a very thorny creeper of the genus *Smilax* and are very easy to rear but the pupae are delicate and need careful handling.

Vanessa cardui L.

Very common everywhere. Thistles are plentiful all round Shillong and on the high treeless plateau. The larvae are very easy to rear. Aberrations are very rare indeed and minor variations are all that can be expected. Hundreds of specimens congregate on the *Buddleia* flowers on the Peak in November.

Vanessa cashmirensis aesis Fruh.

Although there is no reason why this species should not be found on the high plateau we know of no record.

F38. *Symbrenthia hippoclus khasiana* M.

The imagines can be obtained in Shillong and other places on the high plateau in June. At times large numbers of larvae can be found on the nettles and a good series can easily be bred out. Common in the low hills down to the plains.

Symbrenthia hypselis cotanda M.

Several specimens have been obtained on the slopes towards Sylhet. One specimen was caught in Shillong by us in September.

F39. *Argynnis hyperbius hyperbius* L.

This species is common in Shillong and all over the high plateau throughout the summer. The larvae are frequently found on pansies in the garden.

Argynnis childreni childreni Gray.

Very common at high levels.

Argynnis laodice rudra M.

This species is uncommon but specimens are generally to be obtained at Laitlyngkot, on the Peak above Shillong and at the back of Kench's Trace on various wild flowers during the first part of the monsoon. Wild raspberry blossom at Mile 21 on the Sylhet road at the end of May and beginning of June generally produces a couple of specimens every day.

Argynnis lathonia issoea Db.

An intensive search has failed to find this species in the Khasia Hills although there would appear to be no reason why it should not be found since it is known to occur in the Chin Hills and probably also in the Naga Hills.

F41. *Cupha erymanthis lotis* Sulz.

Not rare at Dawki on the Sylhet side and at Burnihat and in the valley of the Umran River on the Kamrup side. A few specimens have also been obtained near Mile 40 on the Gauhati road up to October. Not seen elsewhere except in the thick woods near Lumding in Nowgong District and one at the foot of the Naga Hills during a week's search.

F42. *Atella phalantha* Drury.

Common at low levels and on the plains of Assam throughout the rains particularly at Dawki from March and April; also seen sometimes in Shillong.

Atella alcippe alcippoides M.

Not common. We have obtained a few specimens at Dawki in November and August.

F43. *Issoria sinha sinha* Koll.

Taken on the lower slopes of the hills towards Sylhet. Not rare in the area of Mile 40 on the Gauhati road where it is fond of sitting on the hot tarmac and roadside gravel in early September. The latter specimens are very large. One taken at Syndai in October. It seems very uncommon.

F44. *Cynthia erota erota* F.

Common in Shillong from June and at Jowai. It is available on the high plateau in October and below Cherrapunjee in March. It is generally common at low levels throughout the summer but good specimens of the female are rare.

F45. *Cirrochroa aoris aoris* Db.

This species is more common on the Gauhati Road in August and September than the Cabbage White ever is in Shillong. It is available in Shillong also from April, and below Cherrapunjee in April, September and October. It is probably the commonest butterfly in the district.

Cirrochroa tyche mithila M.

Not common but a few specimens are generally available on the Gauhati road near Mile 40 early in September. Taken in Shillong from May also.

F47. *Cethosia biblis tisamena* Fruh.

Very common in Shillong and all over the hills at higher levels from May to October. Large numbers of the pupae are found on grasses and levels at Mile 24 on the Sylhet road in October, but many of them are parasitized.

Cethosia cyane Drury.

This species is often seen in Shillong during the monsoon particularly the females. The males are commoner lower down on the Kamrup side in the area of Burnihat and above Dawki on the Sylhet side.

F49. *Ergolis ariadne pallidior* Fruh.

Not rare at low levels.

Ergolis merione assama Evans.

Common at low levels and throughout the plains of Assam. It is generally found in the vicinity of castor plants. Taken in Shillong.

F51. *Pareba vesta vesta* F.

Very common indeed everywhere. Some fine dark varieties of the female are generally available in Shillong in small numbers in August and early September. At times the brown and black larvae are exceedingly numerous and in the middle of August large numbers of the black and white pupae are generally to be found on grasses and low herbage at Upper Kench's Trace just beyond Bishop's House.

F52. *Telchinia violae* Fab.

In the orange groves at Burnihat in April. Rare.

ERYCINIDAE.

G1. *Libythea myrrha sanguinalis* Fruh.

A few are generally to be found in August on the shingle and stones beside the river at Snongpadeng village near Dawki. The genus *Libythea* is always fond of sitting on hot stones and shingle. We have noted this species on stones in the bed of the small stream below the Inspection Bungalow at Laitlyngkot at over 6,000 ft.

G2. *Zemerus flegyas indicus* Fruh.

Common at all levels from April.

G3. *Dodona ouida ouida* M.

Not rare on the road to Sylhet on the 'Causeway' and other localities near Pynursla. The female is rare.

Dodona adonira adonira Hew.

Rare. From below Cherra. We have no female. *Dodona eugenes* and *Dodona egeon* are recorded by Bingham from here.

Dodona henrici longicaudata deN.

We have obtained three perfect specimens of this very rare butterfly sunning itself on the warm tarmac just below Margaret Falls (Mile 40) on the Shillong-Gauhati road at the end of the monsoon.

G4. *Abisara fylla* Db.

Common in Shillong and in woods on the high plateau. It is particularly common in the woods close to Mawsmal near Cherrapunjee where the rarer female is also obtainable.

Abisara neophron neophron Hew.

One or two have usually been obtained by us each season at fairly low levels, though we have a specimen from Mawsmal near Cherrapunjee. It is usually found in deep shade in the jungle. Margaret Falls on the road to Gauhati and jungle paths along the river north of Dawki are good localities. This species so closely resembles *Abisara chela chela* deN. that it is more than possible that we have also seen *chela chela* and mistaken it for *neophron*.

Since completing the above list we have been able to obtain a copy of Talbot's 'Butterflies' from the *Fauna of British India* series which, owing to war conditions, we were not able to examine before. As a result certain changes in the generic and specific nomenclature of the list are necessary to bring it up-to-date. These changes are enumerated as follows:—

PAPILIONIDAE.

<i>Poydorus</i> Swainson	replaces	<i>Byasa</i> Moore
<i>Graphium</i> Scopoli	replaces	<i>Zetides</i> Hubner
		<i>Pathysa</i> Moore
		<i>Paranticopsis</i> deN. and
		<i>Meandrusa</i> Moore
<i>Lamproptera</i> Fab.	replaces	<i>Leptocircus</i> Swainson

PIERIDAE.

<i>Cepora</i> Billberg	replaces	<i>Huphina</i> Moore
<i>Valeria</i> Horsfield	replaces	<i>Pareronia</i> Bingham
<i>Eurema</i> Hubner	replaces	<i>Terias</i> Swainson
<i>Appias lyncida eleonora</i> Boisduval	replaces	<i>Appias lyncida hippoides</i> M.

BAT MIGRATION IN INDIA AND OTHER NOTES ON BATS.

BY

HUMAYUN ABDULALI

Some years ago (1940) my attention was drawn to a book *Ten Years Under the Earth* by Norbert Castaret in which there was a reference to bats migrating from France to Japan.

This was very unexpected and an inquiry put to Prof. Landsborough Thomson failed to elicit a confirmation. In his reply he stated that "there was at one time supposed to be evidence that bats crossed the Atlantic, but this was shown to be ill-founded". He also referred to some notes on the subject in the *Journal of Mammology*, and some interesting information on the movements of Fruit Bats in Australia by Ratcliffe in the *Journal of Animal Ecology*, 1926, Vol. 1, p. 32. These papers, however, are not accessible to us.

In spite of the fact that there was no obvious evidence of bat migration similar to bird migration, all observers in India must have noticed that the smaller bats appear to come and go during different seasons. In 1942-43 when travelling was very restricted, we thought it would be a good idea to keep notes on the bat population in the caves of Elephanta Island in Bombay Harbour, and the writer with Messrs. Salim Ali and Charles McCann made an attempt to do so. It was unfortunately impossible to keep notes over any length of time and no concrete evidence of migration is claimed, though they certainly indicate that extensive notes kept over a longer period would bring in valuable information.

As in birds, it was evident that the only method of individual identification was to ring them and we used a small aluminium bird-ring on the bat's forearm, the membrane being slit and the ring turned over the bone. All the males were ringed on the left wing; females on the right in order to facilitate observations.

Our attention was necessarily restricted to the bats inhabiting the several caves and dungeons and no tree-inhabiting bats were collected.

The fragmentary notes are summarised under each species.

The Fulvous Fruit Bat—*Rousettus leschenaulti* (Desm.)

This was the most numerous species, and was seen at some time or the other in all the caves, though the larger number was usually in the "Dungeon Cave" at the western end of the cave-hill. The entrance has fallen in and the floor has also silted up to some extent. The average visitor does not approach or enter this cave.

On 11 April, 1942, the fruit-bats were plentiful and roughly estimated at about a thousand. Many had young clinging to them. When